

REMARKS

Minor changes have been made to the specification. Claims 29 - 32 are amended and claims 1 - 33 remain in the application.

Entry of this amendment to the specification and claims prior to Examination is courteously solicited.

No new matter is added by the amendment herein.

Respectfully submitted,



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MARKED UP COPY OF AMENDMENT PURSUANT TO 37 CFR § 1.121 (b)(1)(iii)

Page 3, line 27 to page 3, line 30.

Aided with disclosures herein, implementation of the present embodiments by those skilled in the art will be readily understood. In consideration of a total approach to a largest number of scenarios and state diagrams, the total [solutions] solution is much more difficult.

Page 4, line 16 to page 4, line 29.

Turning now to FIG. 1, an exemplary computer 10 incorporating thermal lap management according to one embodiment of the present disclosure is illustrated. Computer 10 includes a central processing unit (CPU) 12, read only memory (ROM) 14, and memory 16. Computer 10 further includes at least one fan 18, at least one battery 20 (for example, a removable battery), an AC power unit 22, and a temperature probe 24. A battery absent position is illustrated by reference numeral 21. The components of computer 10 are interconnected via one or more buses, shown collectively as a bus 26. Computer 10 may also include other components such as input/output (I/O) devices (for example, a display, a keyboard, a mouse or other pointer device, and associated controllers), a hard disk drive, and other storage devices (for example, a floppy disk drive, CD-ROM drive, and the like), and various other subsystems, such as a network interface card. These other components are known in the art and not shown in the [figures] Figures nor described further herein for simplicity of explanation. --

Page 5, line 1 to page 5, line 17.

-- With reference still to FIG. 1, ROM 14 includes the computer system basic input output system (BIOS), otherwise referred to as firmware, of computer 10. In addition, fan 18 provides a prescribed cooling action to CPU 12 according to the embodiments of the present disclosure, as further discussed herein. Note that while only one fan 18 is illustrated, more than one fan [are] is possible. Temperature probe 24 provides temperature information, for example, of at least CPU 12.

In the instance of computer 10 comprising a notebook computer, a docking station 28, also referred to as a port replicator, enables computer 10 to be operated in a docked mode, as is known in the art. The docking station enables computer 10 to be easily coupled via a docking connector to a variety of other connections, for example, a video connector, parallel connector, universal serial bus (USB) connector, serial connector, AC adapter connector, etc. Computer 10 further includes a top cover and a base. With a notebook or laptop computer, the top cover generally includes a display screen and opens up to reveal a keyboard underneath the same. The computer further includes a base, on an opposite side from the top cover.

Page 10, line 26 to page 10, line 30.

In connection with identifying techniques to efficiently manipulate and record active and passive cooling [method] methods, the present embodiments make use of the BIOS to determine optimal temperature ranges. In connection with the challenge of generating a real time flow of thermal data from the BIOS into the operating system, the present embodiments utilize the WMI/ACPI interface.

Page 11, line 26 to page 12, line 2.

A main challenge in developing the algorithm was in finding temperature ranges that would be optimal for the different scenarios such as AC power with fast battery charge, AC without charge, AC without a battery, etc. Accordingly, the worst case was chosen as optimal [since] because it would provide cooling under the highest heat generating condition (for example, AC with fast charge), or simply maintain a cooler case temperature under less heat generating conditions (for example, AC with no charge). In addition, a separate algorithm is implemented for DC power.

Page 18, line 14 to page 18, line 21.

Although only a few exemplary embodiments have been described in detail above, those skilled in the art will readily appreciate that many modifications are possible in the exemplary embodiments without materially departing from the novel teachings and advantages described herein. Accordingly, all such modifications are intended to be included within the scope of this [invention] description as defined in the following claims. In the claims, means-plus-function clauses are intended to cover the structures described herein as performing the recited function and not only structural equivalents, but also equivalent structures.

MARKED UP COPY OF AMENDED CLAIMS 29 - 32

PURSUANT TO 37 CFR § 1.121 (c)(1)(ii)

29. (Amended) A method of upgrading thermal management in a computer having [at least one] a central processing unit and [at least one] a fan disposed for providing cooling to said [at least one] central processing unit; said method comprising:

installing a thermal manager in a basic input output system (BIOS) of the computer; and

storing [at least one] a thermal management algorithm in the BIOS computer, wherein the thermal manager is operable for monitoring a temperature of the [at least one] central processing unit and for dynamically controlling a throttling of the [at least one] central processing unit and the [at least one] fan according to the [at least one] thermal management algorithm, wherein the thermal management algorithm enables stabilization of the temperature of the [at least one] central processing unit below a prescribed temperature threshold over a given duration of time.

30. (Amended) The method of claim 29, further comprising utilizing [at least one] a basic input output system (BIOS) table for the thermal management algorithm, the [at least one] BIOS table identifying specific cooling actions to be implemented as a function of the temperature of the [at least one] central processing unit.

31. (Amended) The method of claim 29, further comprising utilizing a user setup routine for enabling a user to select a desired thermal management operation mode for dynamically controlling thermal management, the thermal operation modes including [at least] one of the following selected from the group consisting

of (a) OFF Mode, wherein the OFF Mode disables dynamic thermal management, (b) ON Mode, wherein the ON Mode enables dynamic thermal management, and (c) AUTO Mode, wherein the AUTO Mode enables and disables dynamic thermal management according to a prescribed computer operational characteristic.

32. (Amended) The method of claim 31, wherein the prescribed computer operational characteristic includes [at least] one of the following selected from the group consisting of AC power mode, AC power with battery present mode, AC power mode with battery present and charge mode, AC power with battery absent mode, DC power mode, and computer docked mode with AC power.